CLAIMS

1. A method for monitoring a plasma optical emission, comprising:

collecting optical emission data from a plasma through an aperture defined by moveable members, wherein the moveable members are capable of varying a configuration of the aperture;

holding the moveable members at a particular time, wherein the holding causes the aperture to maintain a fixed configuration; and

detecting a specific perturbation in the plasma optical emission while holding the moveable members.

2. A method for monitoring a plasma optical emission as recited in claim 1, wherein the moveable member are confinement rings within a plasma etching chamber.

3. A method for monitoring a plasma optical emission as recited in claim 2, wherein collecting optical emission data is performed using a window disposed outside of the confinement rings, the window being oriented to collect optical emission data through the aperture.

4. A method for monitoring a plasma optical emission as recited in claim 1, wherein the configuration of the aperture is defined by a size of one or more gaps present between the movable members and a location of the one or more gaps present between the movable members relative to an optical emission collection point.

5. A method for monitoring a plasma optical emission as recited in claim 1, wherein the particular time corresponds to a pre-designated time period prior to an anticipated endpoint of a plasma etching process.

6. A method for monitoring a plasma optical emission as recited in claim 5, wherein the pre-designated time period is within a range extending from about 1% to about 50% of an expected etching process duration.

7. A method for monitoring a plasma optical emission as recited in claim 1, wherein detecting the specific perturbation in the plasma optical emission further includes monitoring a wavelength of the plasma optical emission, the wavelength being associated with a material constituent of the plasma that is representative of a plasma etching process condition.

8. A method for monitoring a plasma optical emission as recited in claim 1, further comprising:

continuing to hold the moveable members for a period of time after detecting the specific perturbation in the plasma optical emission.

9. A method for monitoring a plasma optical emission as recited in claim 8, wherein the period of time is within a range extending from about 1% to about 50% of an etching process duration.

10. A method for detecting an endpoint of a plasma etching process, comprising:

performing a plasma etching process within a chamber having moveable confinement rings;

reaching a pre-designated time prior to an anticipated endpoint time of the plasma etching process;

holding the moveable confinement rings in a fixed position upon reaching the pre-designated time prior to the anticipated endpoint time of the plasma etching process;

monitoring a plasma optical emission from a window through gaps between the moveable confinement rings, wherein the monitoring is performed while the moveable confinement rings are being held in the fixed position relative to the window; and

detecting a perturbation in the plasma optical emission, the perturbation being indicative of an endpoint of the plasma etching process.

11. A method for detecting an endpoint of a plasma etching process as recited in claim 10, wherein the pre-designated time is within a range extending from about 1% to about 50% of an expected duration of the plasma etching process.

12. A method for detecting an endpoint of a plasma etching process as recited in claim 10, wherein the gaps between the moveable confinement rings define an aperture through which the plasma optical emission is monitored.

13. A method for detecting an endpoint of a plasma etching process as recited in claim 10, wherein monitoring the plasma optical emission is performed using a window disposed outside of the moveable confinement rings.

14. A method for detecting an endpoint of a plasma etching process as recited in claim 10, wherein detecting the perturbation in the plasma optical emission further includes monitoring a wavelength of the plasma optical emission, the wavelength being associated with a material constituent of the plasma that is representative of a plasma etching process condition.

15. A method for detecting an endpoint of a plasma etching process as recited in claim 10, further comprising:

continuing to hold the moveable confinement rings in the fixed position for a period of time after detecting the perturbation in the plasma optical emission, the period of time being within a range extending from about 1% to about 50% of a duration of the plasma etching process.

16. A chamber for providing a plasma to perform an etching process, comprising:

a chuck for holding a substrate within the chamber;

a window in the chamber for monitoring the plasma when performing the etching process;

a plurality of confinement rings surrounding the chuck, the window providing a view of the plasma through one or more spaces defined by at least one of the plurality of confinement rings; and

a confinement ring movement controller capable of setting programmable periods of time for moving the plurality of confinement rings, the confinement ring movement controller being capable of holding the plurality of confinement rings during a programmable period of time when monitoring for an endpoint condition through the window.

17. A chamber for providing a plasma to perform an etching process as recited in claim 16, wherein the window is disposed outside a periphery of the plurality of confinement rings.

18. A chamber for providing a plasma to perform an etching process as recited in claim 16, wherein the window is configured to collect and provide plasma optical emission data to an optical transmission component.

19. A chamber for providing a plasma to perform an etching process as recited in claim 16, wherein the programmable period of time when monitoring for the endpoint condition is defined by a time period prior to an anticipated endpoint time, the time period ranging from about 1% to about 50% of an expected duration of the etching process.

20. A chamber for providing a plasma to perform an etching process as recited in claim 16, wherein holding the plurality of confinement rings includes maintaining a size

and a location of the one or more spaces defined by at least one of the plurality of confinement rings in a fixed state relative to the window.